

WHAT IS CLAIMED IS:

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1. A magnetic recording medium,
comprising:

an underlayer formed on a substrate, the
underlayer made of Cr based substance; and

10 a magnetic layer formed by epitaxial
growth on said underlayer, the magnetic layer made
of Co based magnetic substance;

wherein

15 said magnetic layer further comprises a
plurality of layers, each made of Co based alloy
including at least one of oxide and nitride as
additional content.

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2. A magnetic recording medium,
comprising:

25 an underlayer formed on a substrate, the
underlayer made of Cr based substance; and

a magnetic layer formed by epitaxial
growth on said underlayer, the magnetic layer made
of Co based magnetic substance;

wherein

30 said magnetic layer further comprises:

a first magnetic layer made of Co based
alloy including at least one of oxide and nitride as
additional content; and

35 a second magnetic layer made of Co based
alloy, the second magnetic layer formed on the first
magnetic layer.

3. The magnetic recording medium as claimed in claim 2, wherein the first magnetic layer further comprises a plurality of layers, each made of Co based alloy including at least one of oxide and nitride as additional content.

10 4. The magnetic recording medium as claimed in claim 1, further comprising:
at least one of Cr layer and Cr based alloy layer formed on said magnetic layer.

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5. The magnetic recording medium as claimed in claim 1, wherein the Co based alloy including oxide as additional content is a member selected from the group consisting of CoPt alloy-SiO₂, CoPt based alloy-SiO₂, CoPt alloy-Al₂O₃, and CoPt based alloy-Al₂O₃.

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6. The magnetic recording medium as claimed in claim 1, wherein the Co based alloy including nitride as additional content is a member selected from the group consisting of CoPt alloy-Si₃N₄ and CoPt based alloy-Si₃N₄.

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7. A method of fabricating a magnetic

recording medium, comprising the steps of:

forming an underlayer on a substrate by depositing Cr based substance and a plurality of magnetic layers on the underlayer, each magnetic
5 layer formed by depositing Co based alloy including at least one of oxide and nitride as additional content by epitaxial growth, a composition of the Co based alloy being different from one another, wherein no heat and bias voltage are provided to the
10 substrate; and
heating the substrate thereby to promote segregation of chromium in grain boundaries of the plurality of magnetic layers.

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8. A method of fabricating a magnetic recording medium, comprising the steps of:

20 forming an underlayer on a substrate by depositing Cr based substance, at least one first magnetic layer on the underlayer by depositing Co based alloy including at least one of oxide and nitride as additional content by epitaxial growth,
25 and a second magnetic layer on the first magnetic layer by depositing Co based alloy including neither oxide nor nitride as additional content, wherein no heat and bias voltage are provided to the substrate; and
30 heating the substrate thereby to promote segregation of chromium in grain boundaries of the magnetic layers.

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9. The method as claimed in claim 7,

further comprising the step of:

forming a Cr layer on the magnetic layer
by depositing chromium before the step of heating
the substrate.

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10. The method as claimed in claim 7,
10 wherein each step is performed in vacuum in which
exposure to residual gas is less than 0.6 langmuir.

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11. The method as claimed in claim 7,
further comprising the step of:

forming a nucleation site layer of island
structure thereby to finely grain the underlayer
20 before the step of forming the underlayer.

25 12. The method as claimed in claim 7,
wherein the magnetic layers are formed by RF
sputtering method.

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13. A magnetic recording apparatus in
which the magnetic recording medium as claimed in
claim 1 is built.

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14. A magnetic recording apparatus of which magnetic recording medium is fabricated by the method as claimed in claim 7.